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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/562,330 | 12/23/2005 | Andreas Schilling | 1093-145 PCT/US | 5691 |

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07/07/2009

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| EXAMINER |
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PRITCHETT, JOSHUA L

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| ART UNIT | PAPER NUMBER |
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2872

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| MAIL DATE | DELIVERY MODE |
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07/07/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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| Office Action Summary | Application No. 10/562,330 | Applicant(s) SCHILLING ET AL. | |
| | Examiner JOSHUA L. PRITCHETT | Art Unit 2872 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 22 and 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to Amendment filed May 4, 2009. Examiner considered all applicant's arguments.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 12, 13, 15-19, 21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (US 2001/0043396).

Regarding claim 1, Lee discloses an optical security element having a substrate layer wherein a relief structure defined by relief parameters is shaped in a surface region of the substrate layer which region is defined by an X-axis and a Y-axis for producing an optically perceptible effect (abstract) wherein one or more relief parameters defining the relief structure in the surface region are varied periodically in accordance with a periodic parameter variation function (Fig. 1) wherein the surface region is divided into one or more pattern regions (2) and a background region (1) and wherein one or more of the relief parameters defining the relief structure relief shape, relief depth, spatial frequency and azimuth angle in the background region

Art Unit: 2872

and one or more pattern regions are varied periodically in accordance with a periodic parameter variation function wherein the relief structure is a diffraction grating (abstract) and the period of the parameter variation function is between 20 and 300 microns (para. 0065) and one or more of the relief parameters defining the relief structure, relief shape, relief depth, spatial frequency and azimuth angle in the one or more pattern regions are varied in accordance with a parameter variation function which is phase-displaced with respect to the parameter variation function of the background region (Figs. 1 and 10).

Regarding claim 2, Lee discloses the phase displacement of the parameter variation function between the pattern region and the background region is about 180 degrees (Fig. 5a).

Regarding claim 3, Lee discloses the phase displacement of the parameter variation function between the pattern region and the background region is selected in accordance with the contrast to be set (para. 0099).

Regarding claim 4, Lee discloses the relief structure is a diffraction grating whose azimuth angle is varied periodically in accordance with the parameter variation function (Fig. 5b).

Regarding claim 5, Lee discloses the mean azimuth angle in relation to the resolution capacity of the human eye is constant (para. 0095).

Regarding claim 6, Lee discloses the parameter variation varies the azimuth angle of the diffraction grating periodically in dependence on the value of the X-axis (Fig. 5a).

Regarding claim 7, Lee discloses the parameter variation function varies the azimuth angle of the diffraction grating in such a way that the diffraction grating is composed of a plurality of serpentine line-shaped lines (Fig. 5a).

Art Unit: 2872

Regarding claim 8, Lee discloses the parameter variation function is a sine function which varies the azimuth angle of the diffraction grating in dependence on the value of the X-axis (fig. 5a).

Regarding claim 9, Lee discloses the parameter variation function varies the azimuth angle of the diffraction grating periodically in dependence on the value of the X-axis and the value of the Y-axis (Fig. 5a).

Regarding claim 10, Lee discloses the parameter variation function varies the azimuth angle of the diffraction grating in such a way that the diffraction grating is composed of a plurality of lines arranged in concentric circles (Fig. 12c; para. 0095).

Regarding claim 12, Lee discloses the relief structure is a diffraction grating whose spatial frequency is varied periodically in accordance with the parameter variation function (Figs. 5a-6b).

Regarding claim 13, Lee discloses the mean spatial frequency in relation to the resolution capacity of the human eye is constant (para. 0095).

Regarding claim 15, Lee discloses the parameter variation function is a sawtooth function, triangular function or sine function (Fig. 5a).

Regarding claim 16, Lee discloses the relief structure is a diffraction grating whose profile depth is varied periodically in accordance with the parameter variation function (para. 0024, 0095; fig. 7d).

Regarding claim 17, Lee discloses the parameter variation function varies the profiled depth of the diffraction grating periodically between a maximum depth and a minimum depth in dependence on the value of the X-axis (para. 0002).

Art Unit: 2872

Regarding claim 18, Lee discloses the parameter variation function is a triangular, rectangular or sine function (Fig. 7c-7e).

Regarding claim 19, Lee discloses the relief shape is varied periodically in accordance with the parameter variation function (para. 0095).

Regarding claim 21, Lee discloses the width of the troughs of the relief structure is varied periodically in accordance with the parameter variation function (Fig. 5a-6b).

Regarding claim 23, Lee discloses the phase displacement between the background region and the pattern region is accompanied by a further function change (Figs. 5a-5b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2001/0043396) in view of Staub (US 6,157,487).

Regarding claims 11 and 14, Lee teaches the invention as claimed but lacks reference to the claimed line density. Staub teaches a line density of greater than 300 lines per millimeter (col. 7 lines 8-14). It would have been obvious to one of ordinary skill in the art at the time the

Art Unit: 2872

invention was made to have the Lee invention include the claimed line density as taught by Staub for the purpose of creating a pattern smaller than the perception resolution of the naked human eye.

Regarding claim 20, Lee teaches the invention as claimed but lacks reference to the claimed relief shape. Staub teaches the relief shape is varied periodically between two asymmetrical mutual mirror-symmetrical relief shapes (Fig. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Lee invention include the claimed relief shape as taught by Staub for the purpose of varying the pattern to create an optically perceptible effect.

Response to Arguments

Applicant's arguments filed May 4, 2009 have been fully considered but they are not persuasive.

Applicant argues Lee does not disclose a diffraction grating wherein one or more of the relief parameters defining the relief structure in the surface region are varied periodically in accordance with a periodic parameter variation function. Lee appears to show a relief shape that varies periodically (Fig. 5a and 5b). The relief shape is one of the structures listed in the claim language (current claim 1 line 14). Therefore the Lee reference does teach a diffraction grating with a varying relief structure.

Applicant argues a phase displacement of adjacent structural elements would contradict Lee's underlying concept of parallelism and smooth continuity. The examiner interprets phase displacement as similar to the displacement shown in current Fig. 6b, which shows a peak exists

Art Unit: 2872

in the overall grating pattern and the adjacent displacement shows a valley where the peak would be expected to continue absent the displacement. Lee shows a similar displacement in Figs 5a and 5b where a peak is expected but because of the displacement a valley exists instead.

Examiner notes current Fig. 6b also shows apparent parallelism.

Applicant argues the phase displacement between interstitial structural elements and background structural elements is contrary to the teachings of Lee. Applicant states abrupt discontinuities are not taught by Lee. Lee clearly shows abrupt discontinuities (Fig. 7a). A beginning portion of a diffractive grating (16) is shown. Lee also shows abrupt variation in the phase of the grating (Figs. 9a and 9b).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2872

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA L. PRITCHETT whose telephone number is (571)272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joshua L Pritchett/
Primary Examiner
Art Unit 2872